

# Oral health impacts of vaping

Recent legislative changes affecting access to electronic cigarettes have put vaping (inhalation of e-cigarette vapour) in the spotlight once again, prompting a discussion in this issue on the therapeutic use of vapes for smoking cessation and nicotine dependence. While there is a significant amount of medical literature on the general health effects associated with vaping, the oral health effects are less widely known. Dentists are in a prime position to discuss the effects of vaping on oral health with their patients. While it is difficult to attribute certain oral presentations directly to vaping, it is clear that it can have a detrimental effect in the oral cavity.

Vaping can lead to changes in the oral microbiome, favouring growth of cariogenic bacteria such as *Streptococcus mutans* and suppression of protective species such as *Streptococcus sanguinis*.<sup>1,2</sup> This disruption in bacterial balance can result in increased risk of periodontal disease and dental caries.<sup>3</sup> Dental implant survival has also been shown to be adversely affected in patients who vape compared with those who do not smoke or vape.<sup>4</sup>

There are also concerns about the impact of liquids used in e-cigarettes on tooth structure, as the low pH of these substances is associated with increased enamel erosion and tooth sensitivity.<sup>5</sup>

Dry mouth is a common complaint among individuals who vape.<sup>6</sup> Reduced salivary flow often results in oral discomfort, and difficulty eating, swallowing and speaking. It also increases the risk of dental caries and periodontal disease because of the loss of the protective effect that saliva has on the oral environment. Chronic oral dryness predisposes individuals to halitosis and opportunistic infections such as oral candidiasis (thrush).<sup>7</sup>

Vaping also results in oral mucosal irritation, with sensations of oral burning, stinging and discomfort

frequently experienced.<sup>7</sup> There is also a risk of vapes exploding causing injury to the face and oral mucosa and, in some cases, damage to teeth.<sup>8</sup>

Associations between vaping and the development of oral cancer are still being researched; however, concerns have been raised about the carcinogenic potential of the constituents of e-cigarette aerosols, such as acetaldehyde, which can alter the oral microbiome.<sup>9,10</sup> Studies have also shown that e-cigarette aerosols can induce DNA damage and cell death in oral epithelial cells, which may contribute to carcinogenesis.<sup>11</sup> Additionally, nicotine in e-cigarettes has been shown to promote the development of oral leukoplakia, a potentially malignant disorder.<sup>12</sup>

Smoking tobacco has well-recognised significant impacts on general and oral health, but data are still emerging on the oral health impacts of vaping compared with smoking. Dentists are encouraged to talk to their patients about the general and oral health harms of vaping and smoking, and provide cessation care in conjunction with the patient's general practitioner (GP) or pharmacist. For patients who are vaping or smoking, opportunistic oral mucosal screening should be performed at every appointment to facilitate early identification of oral changes. Patients should be counselled to look out for oral changes and present to the dentist if noted. When counselling patients who vape or smoke, there is also an opportunity for GPs to advise patients of the oral health harms and refer patients for dental review. ◀

*Conflicts of interest: Sue-Ching Yeoh is the Chair of the Dental Therapeutics Committee for the Australian Dental Association (ADA) and the ADA spokesperson on vaping and oral cancer. She is a member of the expert group for Therapeutic Guidelines: Oral and Dental version 4 (under review) and a member of the Australian Prescriber Stakeholder Network.*

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## Keywords

electronic cigarettes, oral health, nicotine, smoking cessation, vaping

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## DENTAL NOTE

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